

August 20, 2001

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

**DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT**  
**LICENSEE EVENT REPORT - 01-004, CONTROL ROD DRIVE MECHANISM UPPER HOUSING ASSEMBLY CRACK INDICATIONS**

Licensee Event Report (LER) 01-004 is attached. The LER describes the discovery of a through-wall crack that was identified in the upper housing assembly for control rod drive mechanism (CRDM) number 21 and additional indications that were identified on other CRDM upper housing assemblies.

This condition is being reported in accordance with 10 CFR 50.73(a)(2)(ii)(A).

**SUMMARY OF COMMITMENTS**

This letter contains no new commitments and no revisions to existing commitments.



Paul A. Harden  
Director, Engineering

CC Administrator, Region III, USNRC  
Project Manager, NRR, USNRC  
NRC Resident Inspector - Palisades

Attachment

<b>NRC FORM 366</b> (1-2001)	<b>U.S. NUCLEAR REGULATORY COMMISSION</b>	<b>APPROVED BY OMB NO. 3150-0104</b> Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.	<b>EXPIRES 6-30-2001</b>
<b>LICENSEE EVENT REPORT (LER)</b> (See reverse for required number of digits/characters for each block)			
<b>FACILITY NAME (1)</b> NUCLEAR MANAGEMENT COMPANY PALISADES NUCLEAR PLANT		<b>DOCKET NUMBER (2)</b> 05000255	<b>PAGE (3)</b> 1 OF 5
<b>TITLE (4)</b> CONTROL ROD DRIVE MECHANISM UPPER HOUSING ASSEMBLY CRACK INDICATIONS			
<b>EVENT DATE (5)</b>			<b>OTHER FACILITIES INVOLVED (8)</b>
MO	DAY	YEAR	FACILITY NAME
06	21	2001	DOCKET NUMBER
<b>LER NUMBER (6)</b>		<b>REPORT DATE (7)</b>	DOCKET NUMBER 05000
YEAR	SEQUENTIAL NUMBER	REV NO	MO
2001	004	00	08
		YEAR	2001
<b>OPERATING MODE (9)</b>		<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)</b>	
3	20.2201(b)		20.2203(a)(3)(ii)
<b>POWER LEVEL (10)</b>		50.73(a)(2)(ii)(B)	
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NRC FORM 366A (1-2001)		U.S. NUCLEAR REGULATORY COMMISSION				
<b>LICENSEE EVENT REPORT (LER)</b>						
<b>FACILITY NAME (1)</b>		<b>DOCKET (2)</b>	<b>LER NUMBER (6)</b>			<b>PAGE (3)</b>
NUCLEAR MANAGEMENT COMPANY PALISADES NUCLEAR PLANT		05000255	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 5
			2001	-- 004	-- 00	

**NARRATIVE** (If more space is required, use additional copies of NRC Form 366A) (17)

### EVENT DESCRIPTION

During the week preceding June 17, 2001, Operations personnel began to notice potential indication of increased Primary Coolant System (PCS) unidentified leakage. On June 17, 2001, an entry into containment was made to attempt to identify the source of the increased unidentified leakage. During the entry, leakage was identified which appeared consistent with a known leak from a fitting on a pressurizer sample line. It appeared that this known leak had worsened.

On June 20, 2001, the plant was shut down from full power operation in accordance with plans to confirm the source of the leak and make repairs. Unidentified leakage had trended from approximately 0.1 gpm to 0.3 gpm. On June 21, 2001, with the plant in Mode 3, entry into containment confirmed slightly increased leakage at the suspected fitting. However, by observation, it was determined that the fitting leakage did not completely account for the change in unidentified leakage. Subsequently, during further walkdown of the PCS, a pressure boundary leak was identified in the control rod drive mechanism (CRDM) number 21 [DRIV] upper housing assembly. Specifically, the leak was observed near the weld (weld #3) of the upper housing assembly pipe to the eccentric reducer. Upon identification, the plant was placed in Mode 5 to effect repairs. Figure 1 (page 4) depicts a drawing of a CRDM upper housing assembly and identifies the weld #3 location.

Non-destructive examination of the CRDM-21 upper housing assembly revealed a through-wall axially oriented crack through the weld. The CRDM-21 upper housing assembly was removed for destructive examination and will be replaced. A detailed metallographic examination of the #3 weld area identified axial, as well as circumferential indications.

### ANALYSIS OF EVENT

The CRDM-21 housing is one of 45 assemblies that include a nominal eight-inch diameter austenitic stainless steel pipe. Each of the 45 CRDMs consists of a reactor vessel head penetration, upper housing assembly and seal housing that are primary pressure boundary components. Each stainless steel (type 347) CRDM upper housing assembly is mounted on a nozzle flange and extends approximately 15 feet to the seal housing and drive package. There are four welds (numbers 2 through 5) on the upper housing assembly, as shown in Figure 1. The #1 weld is located between the control rod mechanism housing flange and the reactor vessel penetration. All five welds on a number of housings were initially examined using various non-destructive examination techniques. The only additional indications identified were near the same weld location as that discovered on CRDM-21 (weld #3). The weld #3 region then became the focal point of further inspections. To date, examinations of the CRDM upper housings using various non-destructive examination techniques (ultrasonic, radiographic and/or visual) have identified ASME Section XI reportable indications in the weld #3 location for 29 CRDM upper housing assemblies. Figure 2 (page 5) shows the CRDM configuration on the reactor head, and identifies which CRDMs have been found with ASME Section XI reportable indications near the #3 weld area. Only the original indication on CRDM-21 has been determined to be through-wall.

### SAFETY SIGNIFICANCE

The safety significance of this event will be determined after inspection activities are completed and results are known. The safety significance will be provided in a supplemental LER.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
NUCLEAR MANAGEMENT COMPANY PALISADES NUCLEAR PLANT	05000255	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 5
		2001	-- 004 --	00	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

CAUSE OF THE EVENT

The cause of the through-wall crack in the CRDM-21 upper housing assembly has been identified to be chloride induced transgranular stress corrosion cracking. This is also the likely cause of the indications in the other CRDM upper housing assemblies. However, a final root cause determination has not yet been completed. The cause of the event will be updated in the supplemental LER.

CORRECTIVE ACTIONS

The CRDM-21 upper housing assembly will be replaced prior to start-up from the current plant outage. Where such action is determined to be appropriate, other CRDM upper housing assemblies will be replaced or repaired prior to start-up. Other corrective actions may be identified as the root cause determination is completed. Corrective actions will be updated in the supplemental LER.

PREVIOUS LERs

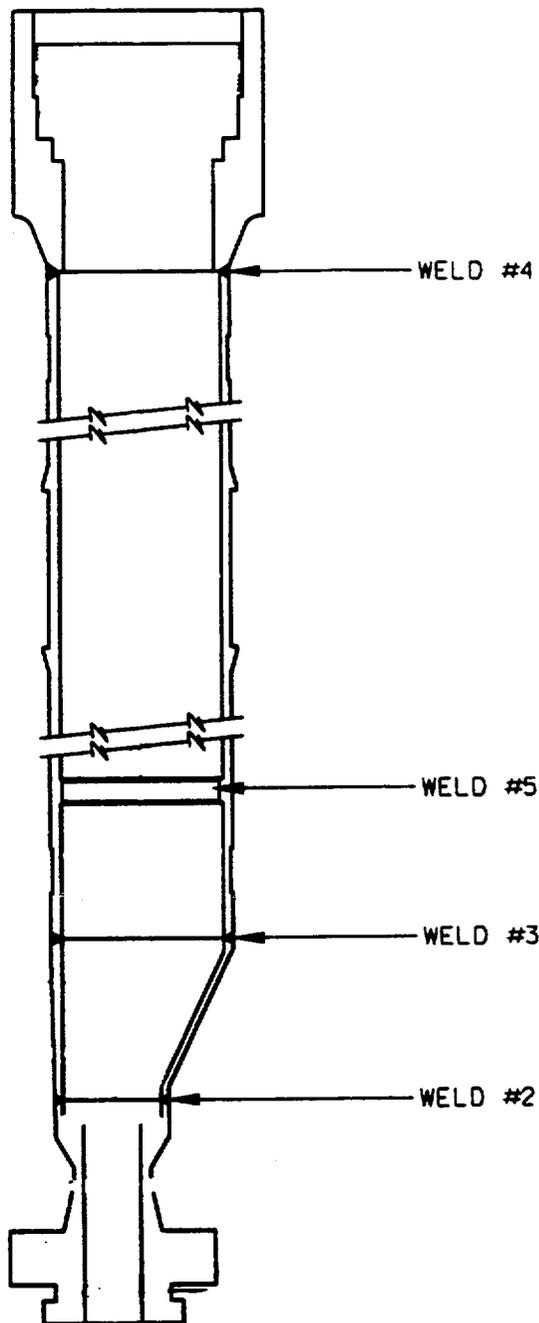
LER 86-40	01/16/87	Cracking of Control Rod Drive Seal Housing
LER 86-40, Rev 1	02/16/87	Cracking of Control Rod Drive Seal Housing
LER 86-40, Rev 2	04/16/87	Cracking of Control Rod Drive Seal Housing
LER 86-40, Rev 3	12/02/87	Cracking of Control Rod Drive Seal Housing
LER 98-14	01/26/99	Control Rod Drive Seal Housing Leak
LER 99-004	12/01/99	Control Rod Drive Seal Housing Leak and Crack Indications
LER 99-004-001	11/08/00	Control Rod Drive Seal Housing Leak and Crack Indications
LER 01-002	05/30/01	Control Rod Drive Seal Housing Leak and Crack Indications

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
NUCLEAR MANAGEMENT COMPANY PALISADES NUCLEAR PLANT	05000255	2001	-- 004 --	00	4	OF 5

NARRATIVE (if more space is required, use additional copies of NRC Form 366A) (17)

**FIGURE 1  
PALISADES PLANT  
CRDM UPPER HOUSING ASSEMBLY DRAWING**



**Weld #1 is not shown on this diagram, but is located between the control rod mechanism housing flange and the reactor vessel penetration**

